

BERTAN

PRECISION HIGH VOLTAGE POWER SOLUTIONS



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Series 210

**Up To 225 Watt Regulated DC Output High Voltage
Power Supplies for Laboratory or Systems Applications**



- Up To 50 kV Output
- Reversible Polarity
- Short Circuit and Arc Protected
- Custom and OEM Designs
- Remote Analog Programming
- Low Ripple and Noise
- Remote Monitoring
- CE Certified

[General](#) | [Output](#) | [Input](#) | [Performance](#) | [Features](#) | [Mechanical](#) | [Accessories](#) | [Options](#) | [Custom Models](#)

General

The Series 210 is a family of precision regulated linear power supplies with output voltages up to 50kV. The units are fully enclosed and can be operated as bench top instruments or mounted into a 19" rack. These stable, low noise high voltage power supplies feature reversible polarity, remote analog programming and monitoring, front panel voltage and current metering, and calibrated direct reading front panel voltage controls. All units have arc and short circuit protection for safe, reliable operation.

The output high voltage of the Series 210 can be remotely programmed or controlled via the

precision front panel direct reading controls. All models can be adjusted over their full output voltage range using an analog programming 0 to -5V signal or using an external potentiometer.

Remote analog monitoring of the high voltage output is standard on all Series 210 power supplies. Signals proportional to the output voltage and output current are provided at the rear panel I/O connector. A logic output signal indicating high voltage polarity is also standard.

Output

Voltage and Current:

See **Chart** below

Polarity:

For 1kV through 5kV models polarity reversal is achieved by a screwdriver type switch located on the rear panel of the unit.

For 10kV through 50kV models polarity reversal is achieved by the reversal of an internal connector. The selected polarity is displayed on a front panel LED indicator.

MODEL	VOLTAGE	CURRENT	RIPPLE (pk-pk)
210-01R	0 to 1kV	0 to 225mA	50mV
210-01.5R	0 to 1.5kV	0 to 130mA	100mV
210-02R	0 to 2kV	0 to 100mA	100mV
210-03R	0 to 3kV	0 to 75mA	100mV
210-05R	0 to 5kV	0 to 40mA	200mV
210-10R	0 to 10kV	0 to 15mA	500mV
210-20R	0 to 20kV	0 to 7mA	1V
210-30R	0 to 30kV	0 to 4.5mA	1.5V
210-50R	0 to 50kV	0 to 2.5mA	5V

All units have reversible polarity. Ripple is measured peak to peak at maximum output.

Input

Power:

115 Vac $\pm 10\%$ @ 5 Amperes (6.25A for models up to 5kV), 50-60 Hz.

230 Vac $\pm 10\%$ @ 3.0 Amperes, 50-60Hz.

Performance

Line Regulation:

$\pm 0.001\%$ of maximum for $+10\%$ input line change.

Load Regulation:

$\pm 0.005\%$ of maximum for 0 to maximum output current change.

Ripple:

See [Chart](#) above

Temperature Coefficient (0 to 50°C):

50ppm of maximum per °C.

Storage Temperature:

-40°C to +85°C

Stability (after ½ hr warm-up):

0.01% per hour; 0.02% per 8 hours.

Features

Front Panel Meter:

Front panel analog meter, switch selectable for reading output voltage and current. The meter accuracy is $\pm 2\%$ of full scale.

Front Panel Controls:

Calibrated front panel direct reading multi-turn precision potentiometer and switches.

Accuracy is $\pm(0.25\%$ of setting + 0.05% of maximum) for models up to and including 30kV;

$\pm(0.5\%$ of setting + 0.05% of maximum) for 50kV model.

Resolution:

0.2V for models up to and including 30kV; 20V for 50kV model.

Remote Programming:

0 to -5 Volt dc analog input signal proportional to 0 to maximum rated output. Accuracy is

$\pm(0.25\%$ of setting + 0.05% of maximum) for models up to and including 30kV; $\pm(0.5\%$ of

setting + 0.05% of maximum) for 50kV model. The programming input impedance is 5

kilohms.

Analog Output Voltage Monitor:

0 to +5 Volts proportional to 0 to maximum output high voltage. Accuracy is $\pm(0.25\%$ of

reading + 0.25% of maximum). The monitor output impedance is 50 kilohms.

Analog Output Current Monitor:

0 to +5 Volts proportional to 0 to maximum output current, except as indicated. Accuracy is $\pm(0.5\%$ of reading + 0.25% of maximum). The monitor output impedance is 50 kilohms.

Current Limit:

Automatic current limiting occurs at approximately 110% of maximum rated output current at the maximum rated output voltage. The allowable maximum output current at any set voltage must be derated linearly from 100% at maximum voltage output down to 30% of maximum output current at 0 output voltage. Supply is self-restoring upon removal of cause of current limit condition.

Protection:

Arc and short circuit, self restoring.

Mechanical

Size:

All units are 19 inch (483mm) wide standard rack mount and 5¼ inches (133mm) high. Models up through 5kV are 11 inches (279mm) deep. All units above 5kV are 16 inches (406mm) deep.

Weight:

See [Chart](#) below

High Voltage Connector:

See [Chart](#) below

Note: Except where noted below, [preassembled HV cable](#) must be purchased separately.

MODEL	OUTPUT	MATING	lbs (kg)
210-01R	JAC	PAE	34 (15)
210-01.5R	JAC	PAE	34 (15)
210-02R	JAC	PAE	34 (15)
210-03R	JAC	PAE	34 (15)
210-05R	JAC	PAE	34 (15)
210-10R	JJA	405787	34 (15)
210-20R	JJA	405787	37 (17)
210-30R	JJA	405787	39 (18)
210-50R	JJB	405787	46 (21)

The mating high voltage connector is provided with each unit. Note: Bertan P/N PAE is equivalent to Kings SHV type 1705-14.

Power Input Connector:

A captive 3-wire line cord and NEMA plug is included.

Low Voltage I/O Connector:

The PROGRAMMING/MONITOR connector P/N JKB provides all remote control and monitor functions. The mating connector P/N PKB is provided.

Cooling:

Internal fan.

Options

Suffix "F", Floating Output:

Available for 1kV through 5kV models. Differential high voltage output via two isolated (+) and (-) high voltage connectors. Either the (+) or (-) output can be returned to chassis ground or isolated from chassis ground by up to $\pm 2000\text{Vdc}$.

Output Connector for "F" Option:

Bertan P/N JDK (Kings UG-931/U) for 1kV through 3kV supplies. Mating Connector, Bertan P/N PDB (Kings UG-932/U) is supplied. For 5kV supply, output connector is Bertan P/N JBA (Kings 1064-1). Mating connector Bertan P/N PBA (Kings P/N 1065-1) is supplied.

Output voltage monitoring and programming remains referenced to chassis ground. Front panel current metering and remote monitoring is omitted.

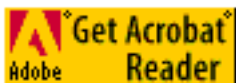
Suffix "RF", Reversible Polarity/Floating Output:

Available for 10kV through 50kV models. High voltage output is referenced to an isolated common return binding post. The isolated return can float up to $\pm 100\text{V}$ from chassis ground. Voltage and current monitoring, as well as voltage programming is referenced to the isolated return binding post.

Custom Models

The Series 210 can be economically and quickly modified to satisfy custom applications. Other output voltage and/or current ratings, custom control features, digital programming, or special mechanical constraints are some of the varied requirements which can be satisfied. Contact **Bertan Sales Engineering** for a responsive review of your application.

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